

A composite image of a Space Shuttle in orbit over Earth, with a grid overlay. The shuttle is shown from a side-on perspective, with its large orange solar panels extended. The Earth's blue and white clouds are visible in the background. The image is divided into a 4x4 grid of squares.

# Changes to the FY 2015 Annual Performance Plan

## Part 4 Supporting Information

Captions and Credits

## Changes to the FY 2015 Performance Plan

Each fiscal year, NASA's budget request to Congress contains an Annual Performance Plan (APP) that aligns with the funds requested. Changes to an APP are generally reflected in the next year's budget request, if the changes are known before the request is sent to Congress. If a change occurs after the request is sent to Congress, then it is reflected in the Annual Performance Report. NASA updates measures in the APP when the final appropriation differs from the amount requested or if Congressional or Executive direction places a different emphasis on programs relative to what was initially requested. Additionally, the dynamic nature of research and development can lead to shifting priorities. This may result in NASA no longer pursuing activities originally identified in the APP or placing greater emphasis on other activities.

NASA's policy has been to allow one of the following actions if programs are impacted by Congressional budget action through an appropriations or authorization law or if Executive direction places a different emphasis on programs:

- Eliminate the performance measure (do not rate the performance measure);
- Change the targeted performance (rate at the new target); or
- Move the measure to the next year's APP (do not rate until the following year).

If priorities have shifted due to the dynamic nature of research and development, and the activity is no longer pursued, NASA generally retains the measure and does not reduce the target, but rather reflects this via a white rating. If emphasis is shifted onto a program for which there was no measure, NASA may choose to add a measure and rate it, to reflect the priority of that activity. Details on NASA's approach to rating measures and setting criteria are in Part 1 of this document.

## FY 2015 Performance Plan Update

NASA submitted the FY 2015 Performance Plan with its FY 2015 Congressional Justification in March 2014. Since then, NASA reviewed and updated the FY 2015 measures in light of the contents of the FY 2016 Congressional Justification, in consultation with the Office of Management and Budget. Additionally, NASA has revised the plan to address typographical errors and other minor inaccuracies.

**This list shows all measures that have been updated or added:**

1.1.1: ESD-15-2 - Complete Orion Key Decision Point-C.

1.1.2 - Complete the Systems Requirements Review by FY 2015 for the In-Situ Resource Utilization Demonstration Experiment on Mars 2020.

1.1.2: ERD-15-2 - Down-select asteroid capture system for the Asteroid Redirect Mission (ARM).

1.1.5: ERD-15-4 - Integrate sensors and feedback controls with the air-revitalization subsystem to increase system performance.

1.2.3: ERD-15-5 - Begin ISS one-year mission joint U.S.–Russian research plan and initiate on-orbit research implementation.

1.2.5: ISS-15-4 - Carry out the first NASA Research Announcement-selected rodent research in the Rodent Research-2 project.

1.2.5: ISS-15-6 - Through the Center for the Advancement of Science in Space (CASIS) cooperative agreement, release two Requests for Proposal, complete proposal evaluation, and select research projects for International Space Station execution in FY 2015.

1.2.6 - Provide cargo transportation to support on-orbit crew members and utilization.

1.2.6: ISS-15-8 - Complete at least three flights by U.S.-developed cargo delivery systems, delivering research and logistics hardware to ISS.

1.4.4: HE-15-7 - Complete the Ionospheric Connection Explorer (ICON) Critical Design Review (CDR).

1.5.1 - Demonstrate progress in advancing the understanding of how the chemical and physical processes in the solar system operate, interact, and evolve.

1.5.1: PS-15-1 - Demonstrate planned progress in advancing the understanding of how the chemical and physical processes in the solar system operate, interact, and evolve.

1.5.6: PS-15-6 - Complete the Origins Spectral Interpretation Resource Identification Security - Regolith Explorer (OSIRIS-REx) Systems Integration Review (SIR).

1.6.1: JWST-15-1 - Deliver the James Webb Space Telescope (Webb) flight backplane to Goddard Space Flight Center.

1.6.3: AS-15-3 - Complete commissioning flights for the Stratospheric Observatory for Infrared Astronomy (SOFIA) Echelon-Cross-Echelle Spectrograph (EXES) science instrument.

1.7.1: ST-15-1 - Research, study, or develop concepts for technologies, as documented in 175 technology reports or plans.

1.7.2: ST-15-3 - Complete at least eight feasibility studies, ground demonstrations, or laboratory experiments proving the technical feasibility of new space technologies.

1.7.3: ST-15-4 - Complete four Key Decision Points for small spacecraft projects to demonstrate game changing or crosscutting technologies in space.

1.7.3: ST-15-5 - Complete four Key Decision Points for Technology Demonstration Mission (TDM) technology development projects.

2.1.2: AR-15-2 -: Develop full-vehicle analysis and optimization tools for multi-point low-boom supersonic aircraft design.

2.1.6 - Support transformation of civil aircraft operations and air traffic management through the development, application, and validation of advanced autonomy and automation technologies, including addressing critical barriers to future routine access of Unmanned Aircraft Systems (UAS) in the National Airspace System, through the development and maturation of technologies and validation of data.

2.1.6: AR-15-7 - Deliver data, analysis, and recommendations based on integrated simulations and flight tests to the RTCA Special Committee on Minimum Operational Performance Standards (MOPS) for Unmanned Aircraft Systems to support preliminary MOPS development.

2.2.3 - Demonstrate progress in detecting and predicting changes in Earth's ecosystems and biogeochemical cycles, including land cover, biodiversity, and the global carbon cycle.

2.2.3: ES-15-3 - Demonstrate planned progress in detecting and predicting changes in Earth's ecosystems and biogeochemical cycles, including land cover, biodiversity, and the global carbon cycle.

2.2.7: ES-15-10 - Maintain a high level of customer satisfaction, as measured by exceeding the most recently available Federal government average rating of the American Customer Satisfaction Index.

2.4.1: ED-15-1 - Provide significant, direct student awards in higher education to (1) students across all institutional categories and levels (as defined by the U.S. Department of Education); (2) racially or ethnically underrepresented students, (3) women, and (4) persons with disabilities at percentages that meet or exceed the national percentages for these populations, as determined by the most recent, publicly available data from the U.S. Department of Education's National Center for Education Statistics for a minimum of two of the four categories.

2.4.2: ED-15-2 - Engage with at least 80,000 educators in NASA-supported professional development, research, and internships that use NASA-unique STEM content.

2.4.5: ED-15-5 - Engage with at least 600,000 elementary and secondary students in NASA STEM activities.

3.1.1 - Define and build diverse workforce skills and competencies needed for the Agency's mission.

3.1.1: AMO-15-1 - Sustain NASA's Innovation Score, as measured by the Innovation-related questions of the Employee Viewpoint Survey (EVS), by taking actions such as refining and updating human capital policies, programs, and systems to support and encourage innovation to meet NASA's missions.

3.1.2 - Advance a workplace environment that affords equal employment opportunities (EEO) to all employees and takes proactive diversity and inclusion (D&I) efforts.

3.1.5: AMO-15-6 - Revise the NASA export control training program plan to update and strengthen the content to reflect changes in regulations and to respond to audit findings.

- 3.1.6: AMO-15-8 - Achieve savings through effective use of both Federal-level and Agency-level strategic sourcing approaches.
- 3.1.7: AMO-15-12 - Ensure that at least 10 percent of electricity consumed is generated from renewable energy sources.
- 3.1.8: AMO-15-13 - Use current and emerging communications technologies, platforms, and methods to reach increasingly broad and diverse audiences.
- 3.1.9 - Manage coordination of advisory committees' (NASA Advisory Council and Aerospace Safety Advisory Panel) recommendations to the NASA Administrator.
- 3.2.3 - Maintain a minimum of 95 percent delivery of the Space Communications network services that support NASA and other customers' mission success.
- 3.2.4 - Replace or upgrade obsolete and unsustainable systems of the Tracking and Data Relay Satellite System (TDRSS) Ground Segment at the White Sands Complex (WSC).
- 3.2.4: SFS-15-6 - Complete the A4 Space Network Ground Segment Sustainment (SGSS) software increment delivery.
- 3.2.5 - Replace aging Deep Space Network (DSN) 70-meter antenna at Canberra Deep Space Communications Complex (CDSCC).
- 3.2.5: SFS-15-7 - Complete the antenna structure at Canberra Deep Space Communications Complex (CDSCC) for Deep Space Station-36 (DSS-36).
- 3.2.6: SFS-15-8 - Complete extension of utilities to support the first horizontal take-off, horizontal landing commercial partner at the Shuttle Landing Facility (SLF), and complete upgrades to the range telemetry systems.
- 3.3.1: AMO-15-25 - Increase the security of NASA's information operations by implementing the FY 2015 target cross-agency priority cybersecurity capabilities, including Information Security Continuous Monitoring (ISCM), Identity, Credential, and Access Management (ICAM), and Anti-Phishing & malware defense.
- 3.3.2: AMO-15-17 - Publish the target architecture for Work from Anywhere (WFA) implementation with specific portfolio roadmaps and details.
- 3.3.5 - By 2017, operate as a single NASA enterprise network and effectively utilize the bandwidth of the Communications Services Office (CSO) backbone for both corporate and mission data, enabling more efficient use of available capacity while improving performance with no degradation to mission services.
- 3.3.5: AMO-15-26 - Complete the Mission Next Generation Architecture (MNGA).
- 3.3.6 - Enhance NASA's data management through open data actions, research and development data access, and new data modeling and technologies.
- 3.3.6: AMO-15-27 - Provide access to high-quality data that is available and accessible to spur innovation.
- 3.3.7 - Increase the adoption of technologies and services such as cloud computing throughout NASA's infrastructure and mission, leveraging savings from solutions such as reduced capital expenditures from not owning hardware, benefits from new technology capabilities, and increased computing flexibility available with "pay as you go" services.
- 3.3.7: AMO-15-29 - Onboard two significant communities into the cloud in FY 2015.

**This list shows all measures that have been removed or moved to the following year:**

1.1.2: ERD-15-1 - Complete the System Requirements Review (SRR) for a robotic precursor mission to prospect for lunar ice.

2.2.4: ES-15-6 - Complete Soil Moisture Active Passive (SMAP) mission success criteria.

2.4.3 - Assure that the institutions NASA engages with represent the diversity of institution types and levels in the Nation as defined by the U.S. Department of Education.

2.4.3: ED-15-3 - Provide funding to institutions of higher education across all institutional categories and types (as defined by the U.S. Department of Education) that meet or exceed the national percentages for these institutional types and category levels, as determined by the most recent, publicly available data from the U.S. Department of Education.

## Image Captions and Credits

### Part 2



#### Agency Priority Goal: Exploration Systems Development, Page 25

The image is an artist's concept of NASA's Space Launch System (SLS) 70-metric-ton configuration, launching to space with the Orion spacecraft. Credit: NASA



#### Agency Priority Goal: International Space Station, Page 26

On September 30, 2014, the International Space Station's (ISS') Canadarm2 and Dextre, also known as the Special Purpose Dexterous Manipulator (SPDM), carries the Rapidscat instrument assembly after removing it from the trunk of the Space Exploration Technologies Corporation (SpaceX) Dragon cargo ship (upper right). The Rapidscat was then maneuvered for attachment to the nadir adapter, which was affixed to the ISS' Columbus laboratory. Credit: NASA



#### Agency Priority Goal: Commercial Crew Transportation, Page 27

NASA's commercial crew partners continue to make progress maturing their transportation systems. Credit, clockwise from top left: Blue Origin, Boeing, SpaceX, and Sierra Nevada



#### Agency Priority Goal: James Webb Space Telescope, Page 28

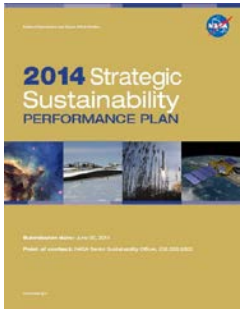
Inside a giant clean room at NASA's Goddard Space Flight Center in October 2014, the pathfinder telescope, a flight-like backplane center section of the James Webb Space Telescope (Webb), stands fully assembled. Teams of engineers built and aligned the pathfinder telescope to rehearse assembly and testing before the actual telescope is built. Credit: NASA/C. Gunn





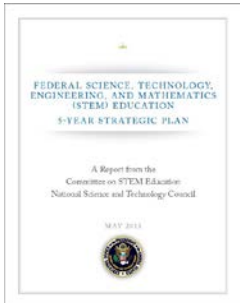
### Cybersecurity, Page 30

An artist's concept of a cybersecurity lock. Credit: NASA



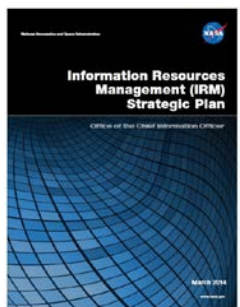
### Climate Change, Page 32

NASA's [2014 Strategic Sustainability Performance Plan](#) outlines the Agency's 10 goals for addressing EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance. It also provides an overview of NASA's ongoing progress toward achieving its long-term sustainability goals in energy conservation, recycling, water management, pollution prevention, design and construction, maintenance and operations, master planning, electronic stewardship, and other areas. Credit: NASA



### STEM Education, Page 33

The [Federal Science, Technology, Engineering, and Mathematics \(STEM\) Education 5-Year Strategic Plan](#) presents the Administration's five-priority STEM education investment areas and initial implementation roadmaps, proposing potential short-, medium-, and long-term objectives and strategies that might help federal agencies achieve the outlined goals. Credit: National Science and Technology Council



### Smarter IT Delivery, Page 34

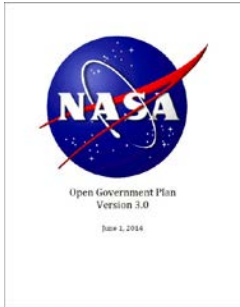
The [2014 Information Resources Management \(IRM\) Strategic Plan](#) guides the direction, focus, mission alignment, principles, investments, and accountability of the NASA Information Technology (IT) organization and maximizes the value of IT to NASA's programs, partners, stakeholders, and the American public. Credit: NASA





#### Shared Services, Page 36

“[NASA Shared Services Center: A Brief History](#)” is an overview of the creation of the NASA Shared Services Center (NSSC), a public-private partnership between NASA, the states of Mississippi and Louisiana, and a service provider, Computer Sciences Corporation (CSC). Credit: NASA



#### Open Data, Page 38

The third version of NASA’s [Open Government Plan](#) traces the Agency’s progress to infuse transparency, participation, and collaboration into missions, programs, and activities. It also builds on the three flagship initiatives—NASA Information Architecture and Management, Climate Data Initiative, and Asteroid Grand Challenge—started in the first two plans. Credit: NASA



#### People and Culture, Page 40

The picture shows the cover for the Complete Listing of NASA 2014 [Agency Honor Award](#) Recipients. NASA presents this most prestigious honor to Government and non-Government employees who have distinguished themselves by making outstanding contributions to the Agency’s mission. Credit: NASA

## Part 3



#### Strategic Objective 1.1, Page 50

An artist’s concept of SLS (left) and Orion. Credit: NASA



#### Strategic Objective 1.2, Page 59

Backdropped by the blackness of space and Earth’s horizon, the ISS is seen from Space Shuttle *Discovery* as the two spacecraft begin their relative separation on March 25, 2009. Credit: NASA/B. Hrybryk

**Strategic Objective 1.3, Page 70**

Commercial Crew Program (CCP) logo. Credit: NASA

**Strategic Objective 1.4, Page 76**

A coronal mass ejection, captured August 31, 2012, by the Solar Dynamics Observatory (SDO). Credit: NASA/SDO

**Strategic Objective 1.5, Page 87**

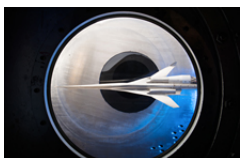
NASA's Mars Curiosity Rover captured this selfie to mark a full Martian year, or 687 Earth days, spent exploring the Red Planet. Credit: NASA/JSP-Caltech/MSSS

**Strategic Objective 1.6, Page 102**

The Small Magellanic Cloud is one of the closest galaxies to the Milky Way. This is a composite image from the Chandra, Hubble, and Spitzer Space Telescopes. Credit: NASA/JPL-Caltech

**Strategic Objective 1.7, Page 113**

The version of Robonaut, R2, currently on the ISS. Robonaut is a dexterous humanoid robot built and designed at NASA Johnson Space Center in Houston, TX. Credit: NASA

**Strategic Objective 2.1, Page 127**

The 8- by 6-foot supersonic wind tunnel at NASA's Glenn Research Center shows a 1.79 percent scale model of a future concept supersonic aircraft. Credit: NASA/Q. Schwinn

**Strategic Objective 2.2, Page 142**

This "Blue Marble" picture of Earth's Western Hemisphere is a composite image using a number of swaths of Earth's surface taken on January 4, 2012 by the Suomi-NPP spacecraft. Credit: NASA

**Strategic Objective 2.3, Page 160**

NASA's [Spinoff 2015](#) publication highlights commercial products created using NASA-developed technology. Credit: NASA

**Strategic Objective 2.4, Page 166**

NASA Astronaut Mike Hopkins explains what it was like to live on the ISS for six months to visitors at the Maryland Science Center in Baltimore, MD on June 9, 2014. Credit: NASA/A. Gemignani

**Strategic Objective 3.1, Page 177**

For the second year in a row, NASA employees ranked the Agency the [Best Place to Work in the Federal Government](#). An employee holds a copy of the award. Credit: NASA

**Strategic Objective 3.2, Page 195**

NASA's newest Deep Space Network antenna, Deep Space Station (DSS)-35 in Canberra, Australia, is now operational. Credit: NASA

**Strategic Objective 3.3, Page 206**

NASA in the Cloud logo. Credit: NASA

**Strategic Objective 3.4, Page 219**

At NASA's Kennedy Space Center in Florida, an Agency Fire Rescue team member gives "thumbs up" as part of a safety training exercise. Credit: NASA/D. Casper